

Electronic Laboratory Notebook (ELN) Newsletter

*ELN Newsletter - Faculty of Science
Number 1 - May 2018*

Brief introduction about myself

My name is Leyla Dellabiancia and, since May 2017, I am working as ELN Functional Application Manager within the Science Faculty office.

I am Italian and after my University studies and before moving to The Netherlands, I worked as Oracle DBA for a major bank.

In The Netherlands I worked for about 14 years in one of IT team in the European Space Research and Technology Centre (ESTEC) supporting hardware and software in the Human Spaceflight Directorate.

The applications I gave support on were Oracle/Unix based and they are used to support different typologies of users (scientists, secretaries, project controllers, financial staff and many others) to store, manage and share space projects' related documents and their related life cycle.

After an official training with the software vendor in June 2017 and some self practice on the application itself, I started to work hard on ELN to setup the environment and to be able to work with you and provide the best support on the tool.

I am very excited about the project we will be working on together and I hope in a significant cooperation with you.

"The journey of a thousand miles begins with one step. (Lao Tzu)"

After almost one year journey into ELN world, it is time to begin its Newsletter to start communicating with all of you regularly to give clear and up-to-date information about the ELN status.

Why ELN?

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Why ELN?

NWO and Horizon2020 “*want research data that emerges from publicly funded research to become findable, accessible, interoperable and reusable (FAIR) by other researchers.*”

The new regulations had an impact on Research Data Management:

- Data management plan mandatory
- Open Access publishing
- Sharing of data used for an Open Access publication
- Implementation of FAIR principles

The researchers have to think about how the data collected must be ordered and categorized to follow the FAIR principles.

The usage of paper Notebooks does not accommodate these principles. The Faculty of Science together with 4 Institutes did product research and decided to use E-Notebook 2014 – an Electronic Laboratory Notebook (ELN) software from Perkin Elmer – to implement part of the data management to be compliant with the new requirements. The system is now available to be used by anybody within the Science Faculty.

Benefits of using ELN:

- Data are digital and saved on a centralized and secured repository.
- Data are organized and can be structured.
- Easy to communicate within colleagues and among the scientific community.
- Ensure SOP compliance.
- Role bases access management.
- End user is owner of the Notebook. Intellectual Property is protected.
- Extensive permission possibilities.
- Both structured and unstructured data can be saved in the database.

- Search through complete Notebook and experiments
- Data can be exported in XML files or generating PDF/Word documents
- Templates can be created to re-use information.
- Notebooks/Experiments can be linked to Projects and Publications.
- Traceability is respected.

Many of the benefits highlighted above ensure the FAIR principles application.

The screenshot displays a chemistry software interface. At the top, a chemical reaction scheme shows the conversion of a starting material (a substituted benzamide) to a product (a substituted benzamide derivative) using n-butyllithium. Below the reaction, there are two tables: 'Reactants & Products' and 'Samples'. The 'Reactants & Products' table lists the reactant and product with their respective molecular formulas, weights, and quantities. The 'Samples' table lists the product with its actual mass, actual molar mass, yield, and purity. Below the tables, there is a 'Procedures' section with text describing the experimental steps, including the use of dichloromethane, sodium sulfate, and flash column chromatography. A 'Solvents' table lists the solvents used, and a 'Reaction Conditions' section specifies the pressure and temperature.

The screenshot shows a software interface for an experiment record. The top part of the interface includes a navigation pane on the left and a main content area. The main content area displays the following information:

- Contact Information:** Contact Number: +1 333-333-333, E-Mail Address: sobrien@pharma.com, Lit. Reference: J Clin Pathol. 2012 May 25.
- Experiment References:** Reference: HighWire Press, Reference2: Lippincott Williams & Wilkins.
- Experiment Description or Purpose:** Trends of stage, grade, histology and tumour necrosis in renal cell carcinoma in a European centre surgical series from 1984 to 2010. Pichler M, Hutterer GC, Chromceki TF, Jesche J, Kappel-Kettner K, Eberhard K, Hoefler G, Pummer K, Zigeuner R.
- Source:** Division of Oncology, Department of Internal Medicine, Medical University of Graz (MUG), Graz, Austria.
- Abstract:** Aims To analyse renal cell carcinoma (RCC) stage, grade, histology and necrosis migration in a large European centre series over the last 27 years. Methods The pathology reports of 2739 consecutive patients with RCC who underwent nephrectomy from 1984 to 2010 at the institution of the authors were systematically re-evaluated. Patients were pooled into five time groups according to the date of surgery: group 1: 1984-1989, group 2: 1990-1994, group 3: 1995-1999, group 4: 2000-2004 and group 5: 2005-2010, respectively. Changes in pT categories according to WHO 2010 classification, tumour grade, histological subtype and presence of tumour necrosis (TN) were evaluated. Results Small pT1a tumours were found in 62/485 (12.8%) and 312/639 (48.8%) patients in groups 1 and 5, respectively (p<0.001). Advanced tumour stages (pT3a-4) were found in 306/485 (63.1%) and 171/639 (26.8%) patients in groups 1 and 5, respectively (p<0.001). The number of grade 3/4 tumours increased from 62/485 (12.7%) and 130/639 (20.3%) in groups 1 and 5, respectively, whereas the number of grade 1 tumours decreased over time (p<0.001). There has been a significant histological migration for the chromophobe subtype from 1.1% to 4.3% (p=0.002). The frequency of the presence TN decreased from 41.7% in group 1 to 32.7% in group 5 (p<0.001). Conclusions In contrast to data from Australia but similar to data from US cohorts, a statistically significant stage migration towards small RCCs was observed in this European cohort. Significant changes in tumour grade, histological subtype and TN were also observed.
- Image Table:** A table with three columns showing image thumbnails. Each row includes the file name (e.g., Issue3.jpg), description (e.g., Subject 11 - Liver), and the image itself.

Check [RDM/Use of ELN](#) presentation.

Current Status

General:

The implementation of the ELN system is proceeding. **The initial system environment setup has evolved.** ELN software is installed on 3 different environments:

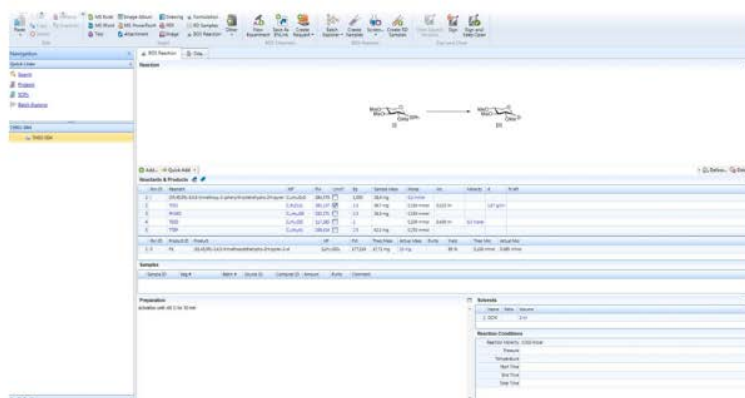
- **Test and Acceptance** for usage by key users and functional manager to test new functionalities, patches and changes.
- **Production** is the live environment with currently 198 users' accounts created. The system is ready to be used. Customizations have been added over this year and we can work together to create your own area.

The current phase of the ELN Project is called 'Paper Notebooks replacement'. The aim of this phase is to transfer what people write in paper into a digitalized form enhancing the paper Notebooks usage. ELN is fully integrated with MSOffice allowing to upload any kind of file (Excel, Word, .ppt, .pdf, Drawings, Images and other file type) to the experiment. The content of every experiment can become searchable and re-usable. Every Notebook and experiment can be linked to a Project, to an SOP, to a Publication or to another experiment. Experiments, papers, notes, results etc. won't be lost after a thesis is completed but can be re-used. Changes can be made easily and supervising can be done following a template or setting up a workflow in the system. ELN allows to structure data so to become a digital repository for your experiments. In this phase of the ELN project, the system can be used by anybody as a digital Notebook.



Paper Notebooks

- Handwritten data
- Time consuming process
- Difficult to do searches
- Difficult to make changes
- Hard to keep it organized
- Long time to submit the research, to share it and to protect the IP



Electronic Notebooks

LACDR, LIC, IBL and CML Institutes are configured inside the system. Although some customizations have been implemented in terms of security and structure, many Divisions have a baseline configuration that allows everyone to use the system despite the setup of processes, workflows and supervising's activity.

LACDR:

Following the Institute reorganization, in September 2017, LACDR structure in ELN has also been reorganized. There are now 20 groups, each one of them corresponding to one PI. Baseline security and configuration has been setup to allow every group/member to start using the software. The current system works group wise; this means that projects, SOPs and notebooks are accessible/visible only within a PI group. Customization and privileges changes can be requested.

The following customizations have been made and are available:

- DDS4 customization : 2 new experiment type ([DDS Chemistry](#) and [DDS BioAssay](#)) have been deployed in the Production environment for L.Heitman and A. Ijzerman groups
- DDS2 customization: ongoing testing
- DDS/J.Beltman team: work in progress for 'Bug Report' and 'In Silico' experiment type

IBL:

3 groups are currently configured in the system (ASH, Micro Biotechnology & Health, Plant Science & Natural Products). In February 2018, a new protocol called [ASH-Fish v2](#) developed by J.Willemse, has been deployed in the Production environment for the usage of the team.

For the other teams the 'Basic Experiment' and its integration with MSOffice files, allow to perform daily work.

LIC:

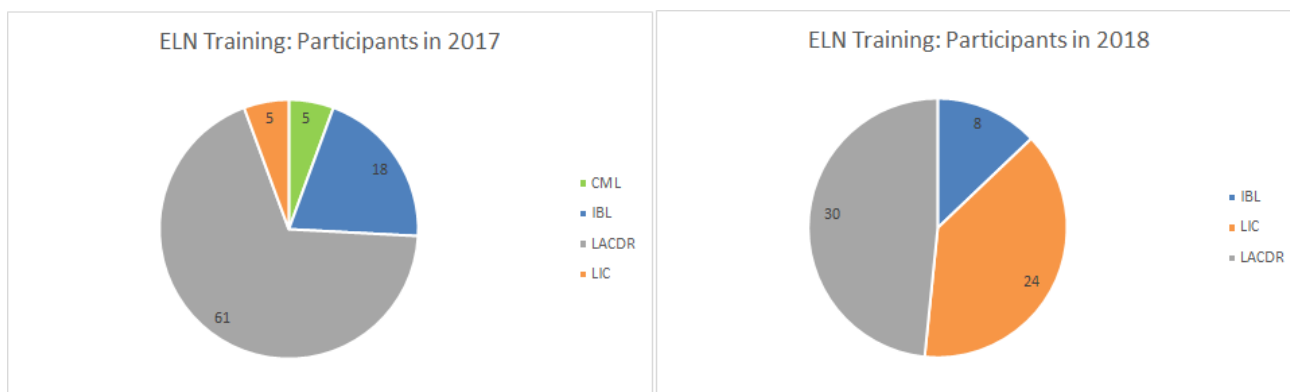
Initially only 2 groups were using ELN (BOS and MP). Over the past months 4 new groups have started using the system (BSC, CASC, MCBIM and MACBIO). Currently the standard 'Discovery Chemistry' experiment type available by default on the system, and its integration with MSOffice files, allow the teams to perform their daily work.

CML:

The Institute slowly started to embrace the usage of the system.

ELN Training

The ELN Training started in August 2017. In 2017, 89 people attended the training.



The training in 2018 is scheduled every month and in March the specific 'PI functionalities' training has also started. So far 8 PIs attended the training and 54 regular users the 'User's functionalities' training.

[Check the upcoming schedule and how to register.](#)

What's new?

Customizations for all Institutes

Upon usage of the system, key and regular users came out with ideas or calls for improvements. The list below shows the custom-made functionalities developed, tested and distributed in the past months:

- **'Notebook Free Name'** functionality
- **'Notebook ordered by Name'** functionality
- Privileges settings as required
- Introduction of a **'General Announcements'** box available on the users' Home Page.
- Ongoing customization for all the Institutes: **'Co-Author'** possibilities for the experiments; usage of a **'To Be Reviewed'** status for the experiments; **naming convention** in the 'User Profile'; **SOPs notification**.

Change Advisory Board

In January 2018 there has been the kick off of the ELN CAB (Change Advisory Board) to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes, in order to minimize the impact of change-related incidents upon service quality, and consequently improve the day-to-day operations of the organization.

Success Stories

A colleague from LACDR/SBP wanted to share his experience for this 1st Newsletter:

"I have used the ELN now for some experiments. It really is a great system. Experiments can be found back easily especially via the free naming option. Furthermore working inside a project of your own and/or of someone else can be easily employed inside the ELN. Attachments like PDFs, Word-files and Excel sheets can be easily inserted as well as photographs. Some matters still need to be discussed (e.g. access to the system in the lab, notebook safety in the lab). (Dirk-Jan)"

General Information

Contact

Email to eln-bioscience@science.leidenuniv.nl

Events

See [Training Schedule](#)

Curious?

Several **ELN tutorials** can be found on the [Faculty's YouTube channel](#). The videos cover some of the basic ELN functionalities:

A [Web User Guide](#) is also available. Here you can find general information, examples, basic and advance functionalities etc.

Links

- [Nationaal plan Open Science](#)
- [Amsterdam Call for Action on Open Science](#)
- [NWO](#)
- [Regeling Datamanagement Universiteit Leiden](#)
- [University Library: Datamanagement](#)
- [FAIR principles](#)
- [List of metadata standards](#)
- (University Library) [Example list selection data to archive](#)
- (University Library) [Leiden Research Data Information Sheets](#)
- (University Library) [Template Data Management Plan](#)

- [PerkinElmer ELN](#)

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